WHAT IS CLAIMED IS:

1. A first transceiver for coupling a first functional device to a serial bus that extends to a second transceiver, the first transceiver comprising:

a first line receiver receiving second serial data and second control primitives over the serial bus from the second transceiver, the second control primitives representing a sensed physical layer quality sensed at the second transceiver;

a first line driver receiving first serial data from the first functional device and providing the first serial data to the serial bus; the first line driver having a first transmitted physical layer quality that is controllable by a first control input of the line driver; and

a first controller receiving the second control primitives from the first line receiver, the first controller providing a control output to the first control input to control the first transmitted physical layer quality at the first line driver as a function of the sensed physical layer quality.

2. The first transceiver of Claim 1 wherein the first controller controls the sensed physical layer quality in real time.

3. The first transceiver of Claim 1 wherein the first controller dynamically calibrates the sensed physical layer quality.

4. The first transceiver of Claim 1 wherein the transmitted physical layer quality includes amplitude.

5. The first transceiver of Claim 4 wherein the transmitted physical layer quality also includes adjustable pre-emphasis.

6. The first transceiver of Claim 1 wherein the transmitted physical layer quality includes adjustable pre-emphasis.

7. The first transceiver of Claim 1 wherein the first transceiver is mounted in the first functional device which is a storage device, and the transceiver couples the disc drive to a host computer system.

8. The first transceiver of Claim 1 wherein the first transceiver is mounted in a first functional device which is a host computer system, and the transceiver couples the host computer system to a storage device.

9. The first transceiver of Claim 1 wherein the serial bus comprises two pairs of conductors.

10. A second transceiver for coupling a second functional device to a serial bus that extends to a first transceiver, the second transceiver comprising:

a second line receiver receiving first serial data over the serial bus from the first transceiver;

a second line driver receiving second serial data from the second functional device and providing the second serial data to the serial bus; and

a second quality sensing circuit sensing a received physical layer quality, the second quality sensing circuit generating second control primitives representing the received physical layer quality, the second control primitives coupling to the second line driver for transmission over the serial bus to the first transceiver.

11. The second transceiver of Claim 10 wherein the second control primitives are generated in real time.

12. The second transceiver of Claim 10 wherein the second quality sensing circuit comprises:

a physical layer quality sensor sensing the received first signal;

a quality standard; and

a quality compare circuit comparing the received first signal to the quality standard and providing the second control primitives.

13. The second transceiver of Claim 10 wherein the second control primitives include an indication of amplitude.

14. The second transceiver of Claim 13 wherein the second control primitives also includes an indication of frequency rolloff.

15. The second transceiver of Claim 10 wherein the second control primitive include an indication of frequency rolloff.

16. The second transceiver of Claim 10 wherein the second transceiver is mounted in a storage device and couples the storage to a host computer system.

17. The second transceiver of Claim 10 wherein the second transceiver is mounted in a host computer system and couples the host computer system to a storage device.

18. The second transceiver of Claim 10 wherein the serial bus comprises two pairs of conductors.

19. A control system for controlling a received physical layer quality of user data transmitted from a first end of a serial bus and received at a second end of the serial bus, the control system comprising:

a first line driver transmitting user data and primitives at the first end, the first line driver having a control input that controls the transmitted physical layer quality at the first end;

a physical layer quality sensor sensing the received physical layer quality at the second end and generating a sensed quality output;

a quality standard, and a comparator receiving the quality standard and the sensed quality output, the comparator generating control primitives representative of a difference between the quality standard and the sensed quality output;

a second line driver at the second end of the serial bus transmitting the control primitives at the second end, and a first line receiver at the first end receiving the control primitives; and

a controller coupled to the first line receiver and generating a control output as a function of the control primitives, and the control output is fed forward to the control input to provide closed loop control of the received physical layer quality.

20. The control system of Claim 19 wherein the control system includes a second control system, substantially the same as the control system, the second control system controlling a second physical layer quality in a direction on the serial bus that is opposite to the direction of control of the control system, to provide bi-directional physical layer quality control on the serial bus.

21. The control system of Claim 19 wherein the sensed quality output comprises an amplitude.

22. The control system of Claim 21 wherein the sensor quality output further comprises a frequency rolloff.

23. The control system of Claim 19 wherein the serial bus comprises two pairs of conductors.

24. The control system of Claim 19 wherein the serial bus carries user data between a first functional device and a second functional device.

25. The control system of Claim 24 wherein the first functional device is a storage device and the second functional device is a host computer system.